

RHODORA NEWS & NOTES

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HIGHLIGHTS OF CLUB MEETINGS

February, 1995. The 906th Meeting of the New England Botanical Club was held at the Harvard University Biological Laboratories, with 58 members and guests present.

Dr. Benito Tan of Harvard's Farlow Herbarium spoke on "Philippine Mosses: Diversity, Biodiversity, and Wallace's Line." Ben started by noting that he would attempt to refute two dogmas—"if you've seen one moss you've seen them all"—and the concept that mosses are not useful as indicators of ecological change.

The Philippine archipelago is part of the Malesian region, which includes the Indonesian islands and New Guinea. There are sharp floristic and faunistic demarcations at the boundaries of, and within, this region—hundreds of genera do not extend across the boundaries despite close physical distance and no climatic differences. These boundaries generally coincide with deep sea trenches, and are now thought to be related to plate tectonic history. At least three major internal regions are recognized. Wallace's Line divides the east and west subunits of Malesia, and generally extends between Borneo and Celebes. The Philippines have been placed east, and west, of Wallace's Line by different investigators. Ben has been attempting to answer the question of whether Wallace's Line exists for mosses, and if the moss flora supports placing the Philippines in the western or eastern subunit of Malesia. He has also been documenting the bryophyte flora and floristic relationships of Palawan, an island group extending northward from Borneo.

Ben took the Club on a floristic tour of the vegetation types of the Philippines, ranging from low elevation rain forest, seasonally dry forest, limestone substrates, serpentine substrates, and high elevation cloud forests dominated by epiphytic bryophytes. The vascular and bryophyte floras of the Philippines contain species and genera that are widely distributed in the paleotropics, display eastern asian affinities, or are part of the maleasian/oceanic flora. The flora also includes remarkable endemics such as the angiosperm *Rafflesia*, and the 2-foot high moss *Dawsonia*.

The distribution of mosses in the Philippines can be explained by two hypotheses. Although the archipelago is not currently close

to China, the affinities of the flora are eastern Asian. This is explained by the geological history of the region: the Philippines were once very close to China and were separated from it by the spreading of the South China Sea. The Philippines definitely belong west of Wallace's Line. The distribution of mosses within the archipelago may also be explained by past climatic changes. Although we tend to think of rain forests as being ancient, Malesia was probably substantially drier during the Pleistocene. Some bryophytes now consist of widely disjunct populations, and exist in scattered dry refugia among the more recent rain forests. Ben closed by noting that the moss flora of the Philippines is now threatened by deforestation, for lumber and for agriculture. This is especially evident on Palawan, where the more seasonally dry forests are being burned to create agricultural fields.

March, 1995 (907th Meeting). Dr. Michael Donoghue of Harvard University was welcomed back to the Club after several years in the deserts of the American Southwest. He spoke on his long-term studies on the genus *Viburnum*, particularly on studies on the New England species that reveal new information about the evolutionary history of the group. The 200-odd species of woody shrubs that make up the genus generally fall into a New World group, with fruits that develop from yellow through red to ripe purple fruits, which fall off. Old World species have ripe red fruits which persist on the plant. Arrowwood and highbush cranberry are typical representatives of each group. An analysis of cpDNA supports the hypothesis that blue fruits arose independently in both groups. *Viburnum acerifolium* is anomalous, with persistent blue fruits, and may be most closely related to a species from the Caucasus. Several species of *Viburnum* also have large, peripheral sterile flowers that may be an adaptation to attract pollinators in shady understory environments. Mike has been testing this hypothesis, thus far inconclusively. In summary, *Viburnum* is an old genus that differentiated fairly early, spread geographically, and subsequently diverged. Based on Mike's experience, it is a rich source for understanding mechanisms of plant evolution.

April, 1995 (908th Meeting). Dr. Richard Evans Schultes was the annual Distinguished Speaker, speaking on the topic "Amazonia:

80,000 species of plants awaiting ethnobotanical study.” Among his many career distinctions, Dr. Schultes was recently awarded the Linnaean Society Medal (analogous to the Nobel Prize), and has been a Club member since 1937. Dr. Schultes has worked on the medicinal flora of the western, Columbian, Amazon forest for more than 50 years—and consequently feels more familiar with the flora of the Amazon than that of New England. Many of the region’s 80,000 species of flowering plants have never been described, let alone investigated. Remarkable features of the region include ancient, highly eroded sandstone mountains that support endemic species, and rivers with rapids and waterfalls. Dr. Schultes’ lifetime of ethnobotanical research has focused on the Native American tribes of this region, who are dependent on a wide range of plants to meet diverse purposes. Coca is chewed on a daily basis, with no addiction, and enables Indians to endure hard physical labor and lack of food. Ten species of rubber (the genus *Hevea*) are native to the Amazon, and although used by the local tribes, have not been fully exploited. Dick once collected 3 tons of seed of a localized ecotype with high productivity, unfortunately displacing the local movie theater. A local palm, which produces an extraordinary number of seeds containing an oil similar to olive oil, has not been introduced into cultivation but is potentially a major oil crop. *Aristolochia medicinalis* is a panacea richly deserving of the specific epithet. Other plants, such as *Paullina yoco*, are used for stimulant beverages. An arrow poison, derived from the bark of lianas, has been successfully introduced into western medicine as a muscle relaxant. Another bark, containing rotenone, is used to stun fish. Various plants are used for spiritual purposes. Hallucinogens from a variety of sources are used by medicine men to communicate with spirits. Snuff, derived from the inner bark of a species of *Virola* (in the nutmeg family) is also a powerful hallucinogen.

Dr. Shultes shared photographs of many of his adventures in the Columbian Amazon region over the past 54 years. He danced in a grass skirt to scare off demons of bad weather, and breakfasted on tapioca bread with chili pepper. He concluded the talk by showing photographs of some of the more devastated areas of Brazilian deforestation, and urged the audience to visit the Amazon and experience the river and forest ecosystem while at least portions of it are intact.

GRADUATE STUDENT RESEARCH AWARD

The 1995 Graduate Student Research Award was presented to Peter Walker, a student at the University of Vermont, in support of his research entitled "Speciation in *Ammophila*: Sequence Variation in the Internal Transcribed Spacer of Nuclear Ribosomal DNA." This research is aimed at understanding the status and evolution of *Ammophila champlainensis*, thought to be a distinct taxon endemic to the Lake Champlain basin.